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Introduction

Prior research indicates that the more successful organizations are those in which contextual, structural and strategic factors are internally consistent. A study is currently being undertaken, investigating the relationship between three such factors - information characteristics, information system (IS) management, and strategy - and their relationship with user information satisfaction (UIS). It is proposed that UIS will be higher when these three factors are internal consistent. The purpose of this paper is to explain the theoretical model underlying the study and to briefly describe the research in progress.

UIS, and factors affecting it, are key elements of IS success. This paper argues that an alignment between strategy and the type of information provided by the management information systems (MIS scope) is one important factor for UIS, while the role of IS management is another. Further, these two factors - alignment and IS management - are related. The paper considers first the alignment between strategy and MIS scope, second the relationship between alignment and UIS, third the relationship between the role of IS management and UIS, and finally the relationship between all these elements. The paper then gives a summary of the propositions and a schematic representation of the research model. It concludes with a brief description of the study being undertaken and the operationalization of the constructs.

Theoretical Background and Framework

Relationship between Strategy and MIS Scope

The relationship between an organization's strategy and aspects of MIS has been recognised and well-documented (Govindarajan, 1988; Govindarajan & Fisher, 1990; Govindarajan & Gupta, 1985; Simons, 1987). The arguments supporting a link between strategy and MIS characteristics are strong (Abernethy & Guthrie, 1994; Miles & Snow, 1978). It is accepted that different strategic objectives will require different types of information for decision making and performance measurement (Eccles, 1991). Businesses with strategies that encourage them to compete through emphasising technology, product and market differentiation are likely to need information of a different type to those businesses competing with strategies that emphasise high quality, low cost, or a stable product range with known markets (Abernethy & Guthrie, 1994; Chenhall & Morris, 1986). Studies of the relationships between strategy and aspects of information technology (IT), including types of IT investment (Floyd & Wooldridge, 1990) and IT structure (Tavakolian, 1989), reinforce these links between strategy and systems.

In this study, strategy is defined as the goals set to achieve objectives, whether at the organizational, business unit, or operational level. The information characteristics considered to be important are those collectively referred to as MIS scope. MIS scope includes the dimensions of *focus* (the extent to which information is focussed on external rather than internal matters of the business), the *time horizon*, (whether information has an *ex post* or *ex ante* orientation), and *quantification* (the degree to which information is expressed in non-financial, non-operational terms) (Abernethy & Guthrie, 1994). Information with a narrow MIS scope will be historical (*ex post*), internally focussed and expressed in financial or operational terms. Broad MIS scope will include externally focussed, non-operational, non-financial information about the future.

Based on previous research, an alignment - or match - between MIS scope and strategy is expected. The research model proposes that businesses with strategies emphasising low costs or stable product ranges are more likely to have MIS that provide narrow scope information. Businesses with strategies of differentiation or flexibility are more likely to have broad MIS scope. In other words, strategic type will 'match' MIS scope.

Effectiveness of a Strategy/MIS Scope Alignment

A strategy/MIS alignment can contribute to the success of many aspects of a business (Das et al., 1991; Wiseman, 1985). IS studies, for example, indicate the effect of an alignment of strategy and IT on competitive advantage and superior financial performance (Das et al., 1991; Floyd & Wooldridge, 1990). The effectiveness of an alignment is also supported by management accounting research. For example, performance has been found to be dependent on an alignment between a firm's strategy and aspects of MIS including MIS scope and types of systems (Abernethy & Guthrie, 1994; Govindarajan & Gupta, 1985; Simons, 1987).

Measures of effectiveness included in previous research relate mainly to firm performance criteria (such as return on investment, profit, cash flow from operations, cost control, sales, market share). One of the problems of these measures of success is the 'distance' of the outcome variable from the alignment variables. A firm's profitability is likely to be affected by numerous variables outside the research framework. The model proposed here suggests a more direct measure of success - user satisfaction with the information provided by the MIS (or UIS). Although the relationship of UIS and firm performance has been questioned (Melone, 1990), UIS is appropriate in this study. The attributes it covers - information relevance, quality, and usefulness - are precisely the characteristics one would expect to find in information that matches the business strategy. For example, in a business competing through differentiation, a close match will ensure that information is available to users that is relevant to their needs. In particular, the MIS will provide information of an appropriate scope - externally-focused, non-financial and *ex ante* information, as well as information of an accounting and operational nature. UIS is likely to be high. If the match is poor, the MIS will provide little or no broad scope information and UIS will be low. On the other hand, with a close match, users in a low-cost strategy business will require and receive little information of a broadly-based nature. Information overload is therefore averted.

In summary, UIS is likely to be high when there is a close match between strategy and MIS scope but lower when there is little or no match.

Organizational Role of IS Management and the Strategy/MIS Scope Match

Management use of sets of policies and procedures can explain why organizations achieve alignment between structure and context variables (Drazin & Van de Ven, 1985). Given that the organizational role of IS/IT management (the IS role) is to develop and put in place a set of policies and procedures (or practices) for managing IS/IT resources, this paper proposes that a strong IS role, indicated by an appropriate set of practices, is likely to be associated with a close match between strategy and MIS scope.

Studies of individual practices such as IS strategic planning (Reich & Benbasat, 1994), IS steering committees (Doll & Torkzadeh, 1987), top management support (Lederer & Mendelow, 1989), and communication of business plans (Calhoun & Lederer, 1990) support this proposition. However, IS role encompasses both the existence and the importance of a number of practices. It is this multi-faceted nature of the IS role that is important since a particular practice may be relevant in one organization but not in another, or the lack of one practice in an organization may be compensated for by the existence of another.

If the IS role is strong, a business with a low-cost strategy is more likely to have a 'matching' narrow-scope MIS while a business concentrating on differentiation will need, and achieve, an MIS of broad scope. On the other hand, an organization with a weak IS role may achieve a match between strategy and MIS scope, but is less likely to do so.

The IS Role and User Satisfaction

Results in studies of various IS management practices and IS success in organizations are mixed. Several reasons for the inconclusive results are possible. First, only single management practices have been considered. Second, several different definitions and measurements for the outcome variable of IS success

have been used, making comparison across studies difficult (DeLone & McLean, 1992). Third, more complex relationships may exist as well as, or in place of, the direct relationship between IS management and IS success (Floyd & Wooldridge, 1990). This study recognises this complexity by considering one possible indirect effect - the match between strategy and MIS scope.

An appropriate set of IS management practices should lead, *ceteris paribus*, to effective IS and, in particular, to user satisfaction. That is, UIS will be high (low) when there is a strong (weak) IS role. However, one of the main components of user satisfaction is the relevance of the information provided. There is no guarantee that users will be provided with information that is relevant simply because the IS role is strong. It is the match between strategy and MIS scope that will produce relevant information and, as already discussed, this match will be associated with a strong IS role. In other words, at least some of the effects of the IS role are indirect, and lead to user satisfaction through the intervening effect of the strategy-MIS scope match. It is therefore proposed that the match between strategy and MIS scope will account for a substantial proportion of the relationship between IS role and UIS.

The Research Model

In summary, the study is investigating the following four propositions. The relationships are illustrated in the figure below and are numbered accordingly.

Proposition 1: The scope of the information provided by an organization's MIS will match its strategy.

Proposition 2: There will be a positive relationship between UIS and the closeness of the match between strategy and MIS scope.

Proposition 3: There will be a positive relationship between the strength of the IS role and the closeness of the match between MIS scope and strategy.

Proposition 4: The relationship between the IS role and UIS will be partly explained by a direct effect (of IS role on UIS) and partly by an indirect effect operating via the match between strategy and MIS scope.

Research Design

Data have been collected by questionnaire from 192 users (production managers, referred to as PMs), 118 chief information officers (CIOs) and 95 manufacturing businesses (i.e. businesses where both the CIO and at least one PM responded). The sample of organizations was randomly chosen and questionnaires were mailed directly to the appropriate managers. The questionnaires sent to the CIOs and PMs were slightly different but both measured all constructs in the research model. Thus, the model to be evaluated for three units of analysis - IS departments, production departments and business units. The measurement of each construct is briefly explained below.

Strategy

Strategy was measured at two levels - business (answered by CIOs) and production department (PMs). For the former, the measure developed by Govindarajan (1988) was used. At the production department level, an instrument for manufacturing strategy was developed based on Parthasarthy and Sethi (1993).

MIS Scope

MIS scope has been measured in previous studies in a variety of ways and from different perspectives. As none were directly applicable to this study, a 3-item instrument was developed, each item a separate dimension of scope.

Match.

Having regard to comments relating to fit variables (Drazin & Van de Ven, 1985; Venkatraman, 1989) and to problems associated with difference scores (Johns, 1981; Peter et al., 1993) the match variable was measured in two ways. First, two direct questions relating to the match between strategy and MIS scope were included in the questionnaires. Second, the match was calculated as the absolute difference between the scores for strategy and MIS scope. Initial analysis indicates that the potential problems associated with reliability, discriminant validity and spurious correlations (Peter et al., 1993) are minor. The model will be tested separately using both methods.

IS Role

Operationalization of the IS role construct was the most complex and innovative. Since no appropriate instruments existed, two measures were developed. The first covered a set of practices for managing IS/IT resources in each business. CIOs were asked whether each practice existed and, if so, how important it was in their business. The list of practices were compiled from those identified in the IS management literature, from a previous study of IS management (Roberts, 1993), and from discussions with IS academics and managers. CIOs were also asked for their perceptions of the effectiveness and efficiency of the management of IS/IT resources. The multi-item scale developed from the first will be used in the analysis for IS departments and for business units. The second scale based on perceptions establishes some construct validity. The PMs were asked only for their perceptions of a number of elements of the IS role. A scale developed from these is used in the production department analysis.

UIS.

The instrument of Seddon (1997) was modified slightly to fit the emphasis in this study on information, rather than an information system.

Results and Conclusions

Initial analysis of the measures indicates generally high reliability and validity. At this stage, the research model has been evaluated only for the production departments. Results are promising and significant relationships have been found using path analysis. It is hoped that further analysis, using data from the CIOs, will provide additional validation of the model.

The research model draws together several strands of research in three related disciplines - information systems, management, and accounting - and has the potential to contribute to the literature in these areas. It should also add to our knowledge of factors affecting user satisfaction and the management of IS/IT resources.

References are available upon request from author.

The Research Model